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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/843,823	04/30/2001	Meng-Chang Yang	YANG3002/EM/6747	9945

7590 08/11/2004  
BACON & THOMAS, PLLC  
625 Slaters Lane, 4th Floor  
Alexandria, VA 22314-1176

EXAMINER
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HANNETT, JAMES M

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 08/11/2004

2

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/843,823

Applicant(s)

YANG ET AL

Examiner

James M Hannett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**1:** Claims 1, 4, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,753,912 Wayne in view of USPN 6,618,083 Chen et al.

**2:** As for Claim 1, Wayne teaches on Column 3, Lines 31-65 and depicts in Figure 1 and 2 An active pixel sensor comprising: a first voltage source (Vref) and a second voltage source (Vdd); a reset transistor (T5) connected to the first voltage source (Vref); a photoelectric element (PD) connected to the reset transistor (T5) for being charged by the first voltage source (Vref) when the reset transistor (T5) is turned on; and a source follower transistor (T2), a readout switch transistor (T1), and a bias transistor (T3) connected in series and supplied with power from the second voltage source (Vdd), the source follower transistor (T2) having a gate connected to a connection point between the reset transistor (T6) and the photoelectric element (PD), the bias transistor (T3) establishing a predetermined bias for the source follower transistor (T2), so as to read out a photoelectric signal from the connecting point when the readout switch transistor (T1) is turned on. Wayne teaches that two voltages are used Vref and Vdd. However, Wayne does not specifically state that the two voltage sources have different voltage levels.

Chen et al teaches on Column 3, Lines 60 - Column 4, Line 25 and depicts in Figure 1 a CMOS pixel with the same configuration of Wayne et al. Chen et al teaches these of two voltage

sources  $V_{res}$  and  $V_{dd}$ . Chen et al teaches that it is advantageous to set  $V_{res}$  and  $V_{dd}$  to be different in order to suppress the mismatch effect caused by a non-ideal reset switch.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to set  $V_{ref}$  less than  $V_{dd}$  as taught by Chen et al in the image sensor of Wayne in order to suppress the mismatch effect caused by a non-ideal reset switch.

3: In regards to Claim 4, Chen et al further teaches on Column 4, Lines 2-15 the first and second voltage sources can be adjusted when the active pixel sensor is operating. Chen et al teaches that the voltage values of ( $V_{res}$  and  $V_{dd}$ ) will be changed depending on the operating condition (for example a wide temperature range, bright-light sensing, and dark sensing).

4: As for Claim 5, Wayne further teaches on Column 3, Lines 57-65 and depicts in Figure 1 the pixel sensor has an output end connected to a correlated double sampling circuit.

5: Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,753,912 Wayne in view of USPN 6,618,083 Chen et al in further view of USPN 6,437,341 Izumi et al.

6: In regards to Claim 2, Wayne in view of Chen et al teaches the use of a pixel circuit that outputs image data to a CDS circuit. Wayne in view of Chen et al teaches that the pixel circuit is supplied with two voltage signals ( $V_{ref}$  and  $V_{dd}$ ). However, Wayne in view of Chen et al is silent as to the layout of the individual circuit elements on the image sensor chip and is further silent as to the wiring of the metal wires used to supply the desired voltage signals to the correct circuit elements.

Izumi et al teaches on Column 16, Lines 26-46 and depicts in Figure 16 that it is advantageous when manufacturing integrated circuits that require a plurality of metal wires, to

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supply the wires on different layers of vertically arranged metal wires, thereby eliminating noise interference caused by parasitic capacitance of the metal wires and saving layout space.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to supply the wires for (Vref and Vdd) of Wayne in view of Chen et al on different layers of vertically arranged metal wires as taught by Izumi et al, thereby eliminating noise interference caused by parasitic capacitance of the metal wires and saving layout space.

7: As for Claim 3, Wayne in view of Chen et al teaches the use of a pixel circuit that outputs image data to a CDS circuit. Wayne in view of Chen et al teaches that the pixel circuit is supplied with two voltage signals (Vref) and (Vdd). However, Wayne in view of Chen et al is silent as to the layout of the individual circuit elements on the image sensor chip and is further silent as to the wiring of the metal wires used to supply the desired voltage signals to the correct circuit elements.

Izumi et al teaches on Column 16, Lines 26-46 and depicts in Figure 16 that it is advantageous when manufacturing integrated circuits that require a plurality of metal wires, to supply the wires on different layers of vertically arranged metal wires, thereby eliminating noise interference caused by parasitic capacitance of the metal wires and saving layout space.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to supply the wires for (Vref and Vdd) of Wayne in view of Chen et al on different layers of vertically arranged metal wires as taught by Izumi et al, thereby eliminating noise interference caused by parasitic capacitance of the metal wires and saving layout space.

### ***Conclusion***

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The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USPN 6,535,247 Kozlowski et al teaches the use of a pixels that uses two different voltages; USPN 6,130,423 Brehmer et al teaches the use of a CMOS image sensor; USPN 5,541,402 Ackland et al teaches the use of an active pixel image sensor as depicted in Figure 1; USPN 6,344,877 Gowda et al See Figure 1.

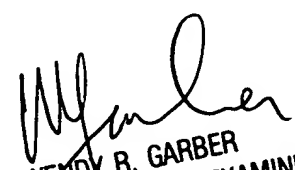
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M Hannett whose telephone number is 703-305-7880. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on 703-305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James M. Hannett  
Examiner  
Art Unit 2612

JMH  
July 29, 2004

  
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